Sustainability Roadmap 2018-2019: Zero Emission Vehicles

Progress Report and Plan for Meeting the Governor's Sustainability Goals for California State Agencies

CALIFORNIA EXPOSITION & STATE FAIR

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CALIFORNIA EXPOSITION & STATE FAIR
Sustainability Roadmap 2018-2019:
Zero Emission Vehicles

Primary Authors
Marcia Shell
Assistant General Manager, Expo Events
Robert Murray Stroud
Chief of Plant Operations

Staff Direct Manager
Tom Martinez
Deputy General Manager

Rick K. Pickering
Executive Director

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Acronyms

CE&SF	California Exposition & State Fair (Cal Expo)
CES	Cal Expo Staff
EO	Executive Order
EVSE	Electric Vehicle Supply Equipment (charging equipment)
GHGe	Greenhouse Gas Emissions
MM	Management Memo
SAM	State Administrative Manual
SMUD	Sacramento Municipal Utility District
ZEV	Zero Emission Vehicle

EXECUTIVE SUMMARY

The California Exposition & State Fair (CE&SF) mission is to create a State Fair experience reflecting California including its industries, agriculture, and diversity of its people, traditions and trends shaping its future supported by year-round events.

CE&SF is an independent State Agency, established in law in the California Food & Agriculture Code. The facility is located on approximately 800 acres in the American River Floodplain. The 350 developed acres house over 80 buildings totaling more than 1 million square feet. The buildings along with the outdoor space have a diversity of uses including the annual California State Fair in July along with many events throughout the year. The State Fair represents approximately 60% of our annual revenue. The property includes a water park, a multi-use sports facility, a horse racing track, a Satellite Wagering Facility, and a year around RV Park. The property functions as a venue for over 2.5 million visitors throughout the year.

CE&SF has been using zero emission golf carts in addition to light duty vehicles for many years. There are L1 charging areas across the property with a concentrated L1 golf cart charging area at the end of the administration building parking lot. Our vehicle fleet is aging and we purchase used vehicles as new vehicles are cost prohibitive at this time. In our effort to meet sustainability objectives, CE&SF partnered with SMUD to provide 14 L1 chargers in our front parking lot for guests during the annual State Fair. The electricity for the L1 charging spaces was generated by the solar panels in that parking lot.

The biggest challenge for CE&SF continues to be the cost of doing business as a large scale entertainment venue while stewarding the developed 350 acres of this property. CE&SF is a self-funded State agency and does not receive money from the state's general fund. We continually strive to meet sustainability goals.

Executive Director Signature

Rick K. Pickering
Executive Director

SUSTAINABILITY GOALS

The Governor has directed California State Agencies to demonstrate sustainable operations and to lead the way by implementing sustainability policies set by the state. Sustainability includes the following general initiatives:

- Greenhouse Gas Emissions Reductions
- Building Energy Efficiency and Conservation
- Indoor Environmental Quality (IEQ)
- Water Efficiency and Conservation
- Monitoring Based Building Commissioning (MBCx)
- Environmentally Preferable Purchasing (EPP)
- Financing for Sustainability
- Zero Emission Vehicle (ZEV) Fleet Purchases
- Electric Vehicle Charging Infrastructure
- Monitoring and Executive Oversight

The Governor has issued numerous executive orders directing sustainable state operations. The orders relevant to zero emission vehicles are:

Executive Order B-18-12

EO B-18-12 and the companion *Green Building Action Plan* require state agencies to reduce the environmental impacts of state operations by reducing greenhouse gas emissions, managing energy and water use, improving indoor air quality, generating onsite renewable energy when feasible, implementing environmentally preferable purchasing, and developing the infrastructure for electric vehicle charging stations at state facilities. The Green Building Action Plan also established two oversight groups, the staff level Sustainability Working Group and the executive level Sustainability Task Force, to ensure these measures are met.

Executive Order B-16-12

EO B-16-12 directs state agencies to integrate zero emission vehicles (ZEVs) into the state vehicle fleet. It also directs state agencies to develop the infrastructure to support increased public and private sector use of ZEVs. Specifically, it directs state agencies replacing fleet vehicles to replace at least ten percent with ZEVs, and by 2020 to purchase at least 25% replacement fleet as ZEVs.

Executive Order B-30-15

EO B-30-15 declared climate change to be a threat to the well-being, public health, natural resources, economy, and environment of California. It established a new interim statewide greenhouse gas emission reduction target of 40 percent below 1990 levels by 2030, and reaffirms California's intent to reduce greenhouse gas emissions by 80 percent below 1990

levels by 2050. To support these goals, this order requires numerous state agencies to develop plans and programs to reduce emissions.

2016 Zero Emission Vehicle Action Plan

The plan establishes a goal to provide electric vehicle charging to 5% of state owned parking spaces by 2022. It also advances the ZEV procurement target to 50% of light duty vehicles by 2025.

AB 32 Scoping Plan

The scoping plan assumes widespread electrification of the transportation sector as a critical component of every scenario that leads to the mandated 40% reduction in GHG by 2030 and 80% reduction by 2015.

Public Resources Code §25722.8

Statute requires reducing consumption of petroleum products by the state fleet compared to a 2003 baseline. Mandates a 10 percent reduction or displacement by Jan. 1, 2012 and a 20 percent reduction or displacement by Jan. 1, 2020.

State Administrative Manual & Management Memos

The following sections of the State Administrative Manual (SAM), and associated Management Memos (MM), currently impose sustainability requirements on the department under the Governor's executive authority:

- MM 15-03: Minimum Fuel Economy Standards Policy
- MM 15-07: Diesel, Biodiesel, and Renewable Hydrocarbon Diesel Bulk Fuel Purchases
- MM 16-07: Zero-Emission Vehicle Purchasing and EVSE Infrastructure Requirements

FLEET VEHICLES

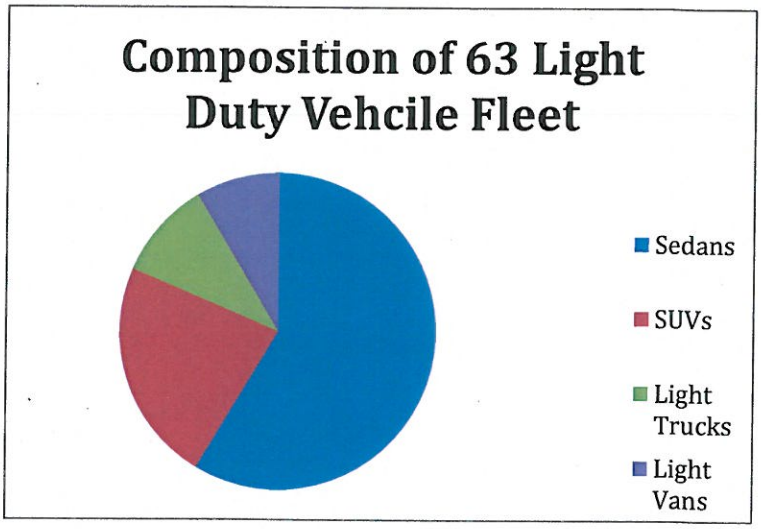
Department Mission and Fleet

This ZEV Report and Plan demonstrates to the Governor and the public the progress the Department has made toward meeting the Governor's sustainability goals related to Zero Emission Vehicles. This report identifies successful accomplishments, ongoing efforts, outstanding challenges and future efforts.

The CE&SF department fleet is used for a variety of typical duties. The maintenance department's use of light duty trucks is generally on paved interior roads on the property. The electricians, carpenters, plumbers, janitors, and set up crews are supporting the facility event schedule on an ongoing basis. They are setting up for weekly events, servicing those events, and then tearing down after the events. Each event has different needs in the way of buildings and outdoor usage. Employee trucks contain work related materials and tools. Typical trips are from the maintenance building to/from a destination on the 350 acre property.

The admissions, parking, box office, programs, and event liaisons use battery operated golf carts during most of the year. The golf cart usage is from the Administration Building or the Maintenance Shops to/from the various admission gates and parking lots on the property. A weekend event may generate thousands of attendees and golf carts provide an easy way for event staff to access the public areas. Trips are frequent but short distances primarily on paved surfaces although one large parking lot is dirt. These golf carts are zero emissions vehicles (ZEV).

Graph 1: Composition of Department's Light Duty Fleet



Fleet is averaging approximately 16.8 miles per gallon for diesel and gasoline fueled vehicles.

Table 1: Total Purchased Fuel YEAR 2016

Purchased Utility	Quantity	Cost ($)
Gasoline	38,461 Gallons	$79,875.99
Diesel	Gallons	
Renewable Diesel	9,549 Gallons	24,962.79
TOTAL GGE	**Gallons**	**$104,838.78**

Incorporating ZEVs into the State Fleet

A widespread shift to Zero Emission Vehicles is essential for California to meet its Green House Gas (GHG) emission goals. State departments are now required to incorporate larger numbers of ZEVs in their vehicle fleets. Starting in FY 17/18 the percentage of new light duty vehicles that must be Zero Emission Vehicles increases by 5% each year, reaching 25% in Fy 19/20 and 50% in FY 24/25.

In addition to light duty vehicles, CE&SF has 17 battery operated (ZEV's) golf carts that are used by staff all year except during rain storms. A typical employee use of the golf carts are for transporting employees and materials from one work area to another across the 350 acre fairgrounds. Plug in Hybrids would also be used in the same manner. This facility typically has multiple events on weekends which can draw thousands of guests to the property. The use of golf carts provides not only a GHG savings but is a safer way to travel amongst pedestrian traffic on the fairgrounds. Fuel Cell vehicles could also be used on the property but the golf cart is a safer way for staff to move through crowds of people because of the small size of the vehicle. Golf carts currently represent 21% of the transportation vehicles used by employees on the property.

Vehicles over meet specified mileage and age thresholds are eligible for replacement. Currently ZEVs are available on statewide commodity contracts in the sub-compact, compact, mid-size sedans and mini-vans vehicle classes. There are currently 3 vehicles in our fleet that are currently eligible for replacement in vehicle classes for which ZEVs are available on contract.

Note for Table 2: Please note the number of vehicles in each class that are currently eligible for replacement.

Table 2: Vehicles in Department Fleet Currently Eligible for Replacement

	Sub-Compact Sedan	Compact Sedan	Midsize Sedan	Mini Van	Total
# of vehicles eligible for replacement			3		3

The table below shows the estimated number of ZEVs that have been or are anticipated to be added to the department fleet in coming years. Please consider the impact of MM16-07 and it's "ZEV/Hybrid First" policy. Estimates of future purchases have already been submitted to DGS in the EVCS Survey. You may use those previously submitted estimates or update them here. Number of ZEV's purchased in prior years is available from green.ca.gov/fleet.

Table 3: ZEV Additions to the Department Fleet

Table Header Format	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22
Battery Electric Vehicle			2		1	2	3	3
Plug-in Hybrid Vehicle						1	1	1
Fuel Cell Vehicle								
Percent of total purchases			100%					
Required ZEV Percentage	10%	10%	10%	15%	20%	25%	30%	35%
Total number of ZEVs in Fleet			17		18	21	25	29

Telematics Plan

Telematics is a method for monitoring vehicle use. Using GPS and on-board diagnostics, telematics provides valuable information that often results in fuel savings and improved vehicle utilization. Telematics is especially important for verifying that Plug-in Hybrid Vehicles are maximizing the use of electric fuel rather than gasoline. The rule requiring 50% of ZEVs purchased to be BEVs is not in place for fleets making use of telematics for all ZEVs.

CE&SF does not have plans to purchase telematics at this time as it is currently cost prohibited.

Public Safety Exemption

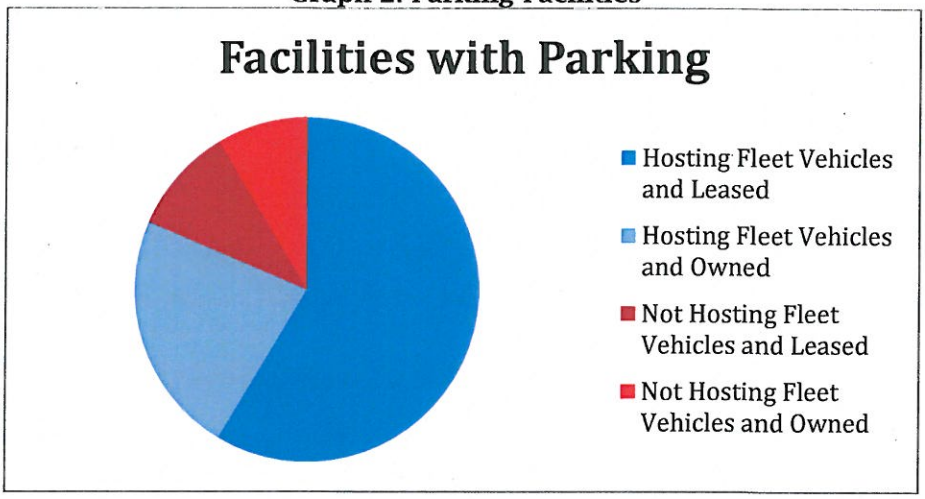
CE&SF police officers are using light duty police logoed vehicles. These vehicles are used for pursuits, arrests, and the officers have a need for tactical gear, equipment, and computers in their vehicles.

ZEV INFRASTRUCTURE

Introduction to the Department of California Exposition & State Fair Parking Facilities

CE&SF rents building space and outdoor space to event promoters. The majority of the events take place from Fridays-Sundays. The events are open to the public. The property has approximately 12,000 public (customer) parking spaces that are in 4 large parking lots. The property is state owned. Fleet, employee, and visitor parking are physically separated. Fleet vehicles are parked in the Maintenance area. There are approximately 80 parking spaces for fleet vehicles and maintenance employee vehicles surrounding the Maintenance Department which is located at the back of the property. The administration building parking lot has 100 parking spaces which facilitates employee parking and guests who are conducting business at Cal Expo.

Graph 2: Parking Facilities



Given the nature of the department's fleet operations, the length of stay for visitors and employees we have determined that L1 chargers should make up approximately 100% of chargers in employee parking areas and 90% of chargers in fleet parking areas, with the remainder being L2. CE&SF already has L1 chargers throughout the grounds. There are more L1 chargers than what is currently needed for employee use.

Based on estimates of future ZEV fleet purchases and a count of visitor and workplace parking spaces it has been determined that the Department will need 25 L1 and 3 L2 chargers to adequately serve fleet vehicles and achieve the goals established in the ZEV Action Plan.

The facilities with the most urgent need for EV charging are listed below.

Table 4: High Priority EVSE Projects

Facility Name	Total Parking Spaces	Existing L1 Chargers	Existing L2 Chargers	New L1 Chargers Needed	New L2 Chargers Needed
Customer-Parking Lot D	2,000	0	0	20	0
Total	2,000	0	0	20	0

Outside Funding Sources for EV Infrastructure

Prior to the 2017 California State Fair, CE&SF executive staff engaged Sacramento Municipal Utility District (SMUD) leadership in an attempt to best determine an inexpensive and time efficient strategy to incorporate EVSE at the state fairgrounds. After an initial assessment of electrical needs, Cal Expo Staff (CES) inquired as to SMUD's openness to allowing for the usage of their solar panels and accompanying infrastructure in Cal Expo customer Parking Lot B. As it turned out the existing infrastructure allowed for an easy installation of 14 recently purchased L1 EVSE. Additionally, the existing solar panels were able to produce the required electricity to fuel the L1 EVSE without taking away from the other electrical needs that take place during the State Fair.

CE&SF also added 3 new L1 EVSE spaces in the Administration Parking Lot. The new additions were made available in the weeks ahead of the State Fair. The 3 helped bolster existing L1 EVSE stations, which have historically been available to the fleet of electronic work vehicles that are utilized throughout the year.

For SMUD's participation, Cal Expo agreed to provide them any credits earned during the course of the 17 day State Fair. In return, SMUD engineers and staff assisted CES with the installation of the EVSE equipment and provided the electricity used at the charging stations free from any charge to Cal Expo. This experience has provided a map for additional efforts with SMUD in the years ahead.

Hydrogen Fueling Infrastructure

CE&SF has no plans to install a hydrogen fueling station at this time.

Comprehensive Facility Site and Infrastructure Assessments

Site Assessments are performed to establish the cost and feasibility of installing needed EV infrastructure. The table below lists the facilities that have been evaluated with Site Assessments

Table 4: Results of Site Assessments

Facility Name	L1 Chargers with Current Electrical System	L2 Chargers with Current Electrical System	Total cost for Project using Current Electrical System	L1 Chargers with Electrical System Upgrades	L2 Chargers with Electrical System Upgrades
Total					

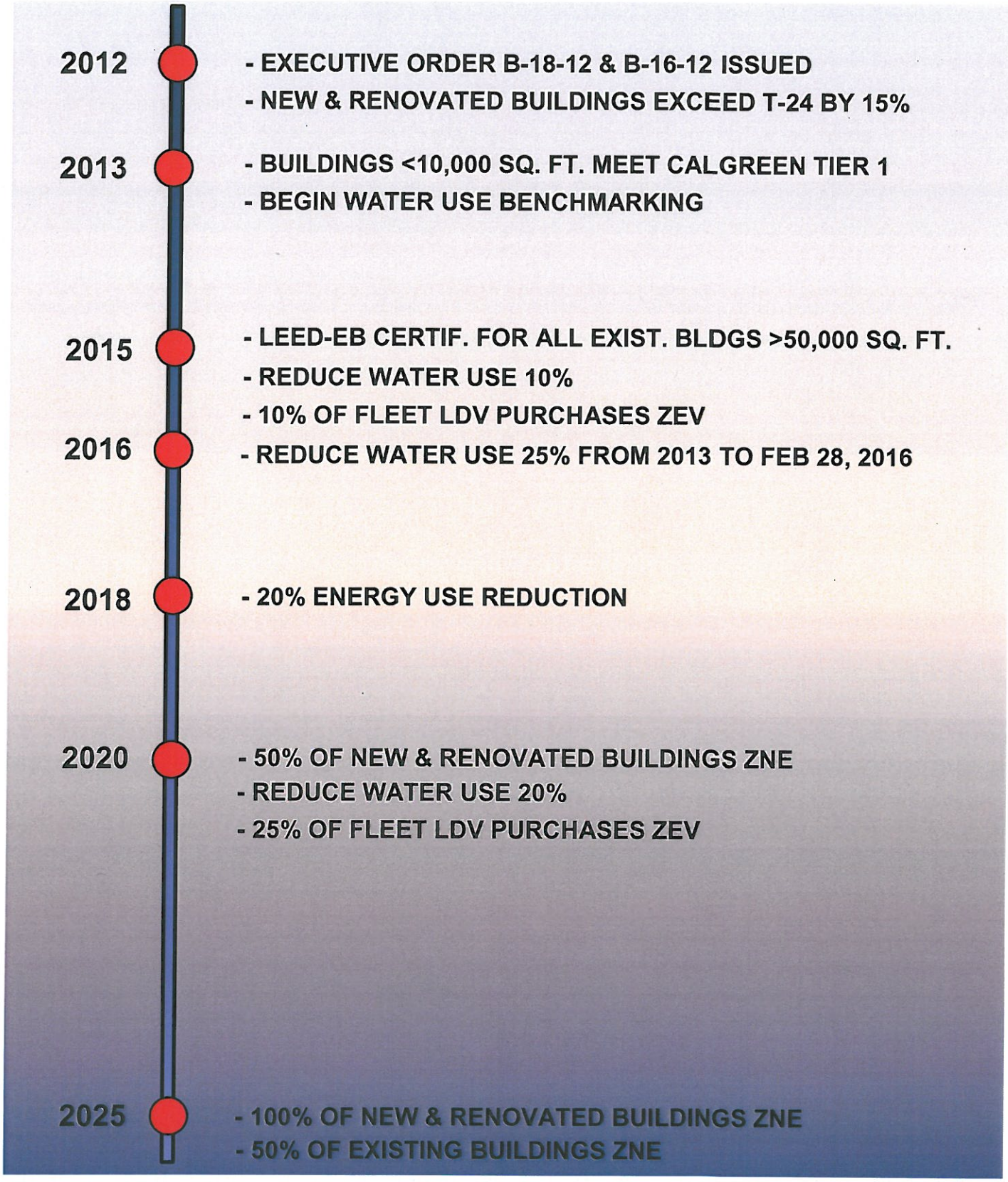
EVSE Construction Plan

Site assessments will be reviewed when completed. CE&SF will evaluate the construction plan alternatives relating to customer need/use and cost.

EVSE Operation

As discussed earlier, our most recent partnership with SMUD wherein the electricity for the vehicle charging was generated by the solar panels onsite was a successful plan. Some data was available from the EVSE use however more data is needed as more projects are planned. Our electricians are familiar with the infrastructure needed and are able to maintain the EVSE in working order. Because our customer length of stay for many events is 5-8 hours, we will most likely not set time limits until each event is evaluated in regards to customer length of stay. We do not currently have a policy in place for cost recovery.

SUSTAINABILITY MILESTONES & TIMELINE



DEPARTMENT STAKEHOLDERS

List individuals, offices, and divisions responsible for leading efforts related to each initiative identified in this report. Include their respective titles, roles, responsibilities.

Incorporating ZEVs Into the Department Fleet	
Robert Murray Stroud	Chief of Plant Operations
Barry Del Carlo	Electrician Supervisor

Telematics	
Robert Murray Stroud	Chief of Plant Operations

Public Safety Exemption	
Joe Robillard	CE&SF Chief of Police
	.

Outside Funding Sources for ZEV Infrastructure	
Tom Martinez	Deputy General Manager
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Hydrogen Fueling Infrastructure	
Robert Murray Stroud	Chief of Plant Operations
Robert Stroud	Fleet Supervisor

Comprehensive Facility Site and Infrastructure Assessments	
Robert Murray Stroud	Chief of Plant Operations
Steve Launey	Capital Outlay Department

EVSE Construction Plan	
Robert Murray Stroud	Chief of Plant Operations
Ron King	Capital Outlay Department

EVSE Operation	
Robert Murray Stroud	Chief of Plant Operations
Jeff Conner	Parking Manager